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ABSTRACT

This document describes "lifetime sports" education in Pennsylvania. "Lifetime sports" is defined as individual and dual sports that increase energy expenditure and contribute to personal fitness so that people can safely pursue them throughout their life. The nistorical background is given for the specific program in Pennsylvania; also given are the objectives of the program for elementary, junior high, middle, and senior high school. The following papers are included in the document as appendixes: (a) "Physical Activity for Positive Health," (b) "Fitness: The Hidden Factor," (c) "National Adult Physical Fitness Survey: Some Implications," (d) "A High School's Physical Education Curriculum with Selective Scheduling," and (e) "Contracting: An Approach to Providing Flexibility in the Physical Education Program." (JA)

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Lifetime Sports in Pennsylvania

A Position Paper

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Pennsylvania Department of Education
Bureau of Curriculum Services
Division of Interdisciplinary Studies
1974

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INTRODUCTION

Physical education is an integral part of the total education program. Socioeconomic changes in the past 20 years have placed a new responsibility on physical education programs and teachers. The shortened work week, increased longevity, expanding population and more reliance on machines -- all mean less physical activity and greater leisure time for more people.

Sedentary behavior is not limited to adults. The five day ritual of riding to school, sitting most of the school day, riding home to the suburbs to watch 30 to 90 minutes of television is common practice for children of all ages.

Modern physical education programs provide not only the physical activity so vital for today's youth, but also the developmental learning experiences appropriate for the growth and maturation of children. Regular physical activity stimulates the development of cardiovascular function, muscular strength and endurance. It promotes psychological benefits which contribute to a sense of well being.

DEFINITION

Lifetime Sports can be defined as individual and dual sports that increase energy expenditure and contribute to personal fitness so that people can safely pursue them throughout their life.

To be adequately prepared physically and psychologically for life, all youth need more than sound academic programs. The sense of accomplishment and control of one's body, mind and external forces through Lifetime Sports is an immediate benefit for students. But as they learn and practice the skills of Lifetime Sports, they are also building the foundation for continuing participation.

Students need to learn the basic Lifetime Sport skills through enjoyable experiences in activities such as golf, archery, badminton, bowling, tennis, bicycling, water sports, winter sports and others best suited to their environment and their interests.

Because we have more time to get outdoors and pursue recreational interests, it is important that all people learn how to play and use this free time in a positive way.

Development of skill patterns, command of knowledge, and improved physical fitness by participation in a variety of sports and activities are valuable.

RESEARCH

Recent studies by health insurance companies, exercise physiologists and heart specialists confirm the preventive effects of regular exercise upon coronary heart disease. People who exercise regularly tend to live longer and are less likely to suffer from degenerative diseases. Studies have found that even small amounts of physical activity, at a low intensity -- like bicycling, and walking -- change sedentary individuals from a *high risk* inactive group to a *lower risk* active group.

Lifetime Sports education can help provide the interest, skill and desire to remain active in adult life. The attached Appendix A, *Physical Activity for Positive Health*, provides additional information.

LABOR AND INDUSTRY

Labor and industry have long been concerned about activity for physical and mental health. With full awareness of the debilitating effects of sedentary executive roles, they have designed programs especially for executives. More recently, the positive impact of these programs has helped industries throughout the nation realize that lifetime activity is equally valuable for all employes.

Such programs help to increase employe morale and productivity,reduce absenteism and to promote good health and a sense of well being. Some industries such as Phillips Petroleum and Xerox Corporation are highly successful in motivating its employes, families and retirees to engage in regular, pleasurable activities. Appendix B, *Fitness: The Hidden Health Factor* provides further evidence for establishing a medical and pragmatic basis for company programs.

PROGRAM

BACKGROUND

Lifetime Sports education in Pennsylvania was introduced during the 1967-1968- school year. In cooperation with the National Lifetime Sports Education Project (a project of the American Association of Health, Physical Education and Recreation), a state training clinic was held at Penn State University to prepare and train state regional clinicians. The clinicians in turn conducted 33 regional clinics during 1967-68, with additional clinics taking place the following year. More than 1,000 individuals were trained in the techniques of teaching Lifetime Sports. As a result, students in public and non-public high schools, colleges and correctional institutions received instruction in bowling, badminton, tennis, golf and archery.

A more recent development in Lifetime Sports education was the 1973 Lifetime Sports Institute. The two day participation workshop was co-sponsored by the Pennsylvania Department of Education and the Cumberland Valley School District. It gave participants the

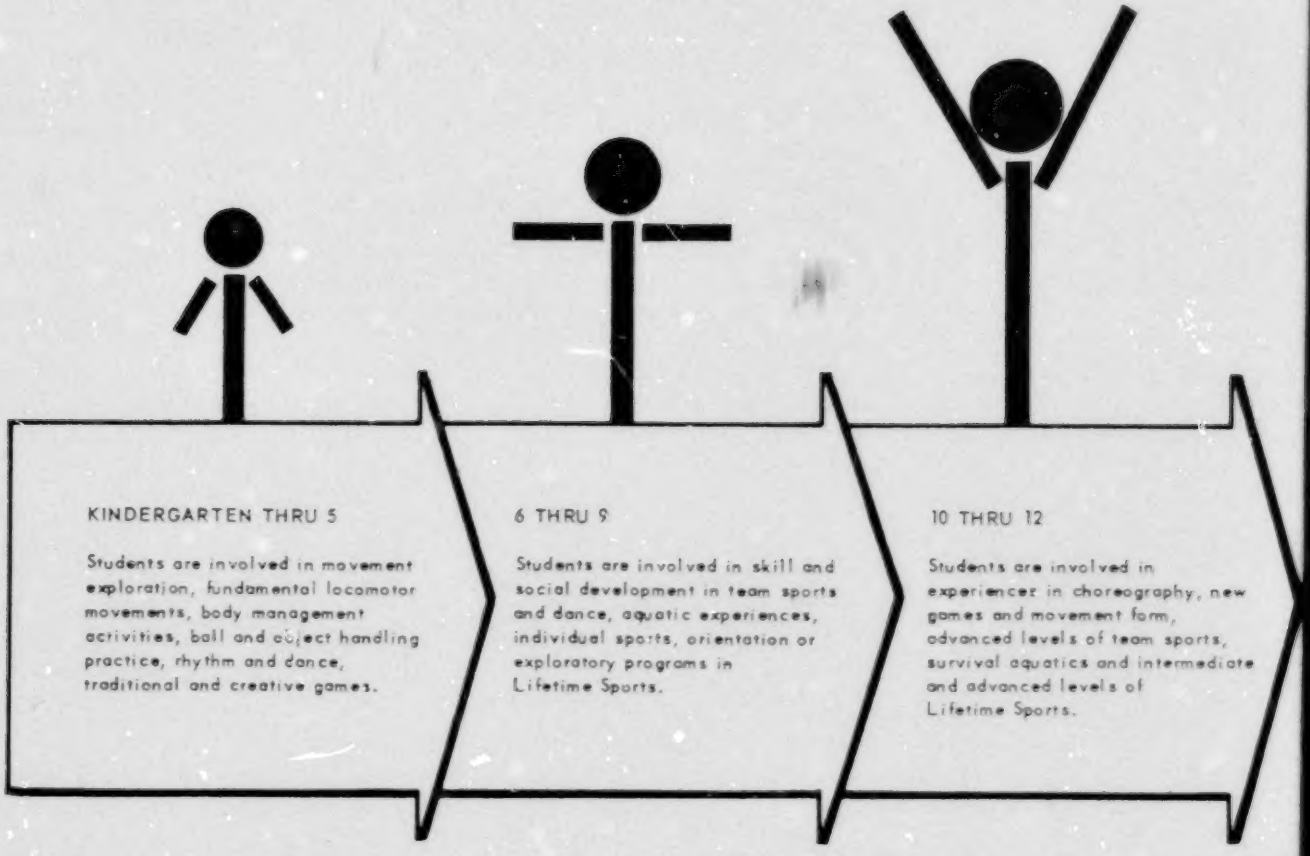
chance to become familiar with many Lifetime Sports and/or study a particular activity in-depth. The institute included not only traditional Lifetime Sports but also many newer Lifetime Sports such as aerobics, bicycling, orienteering and recreational shooting.

Immediately following the workshop, Secretary Pittenger identified Lifetime Sports in the physical education program as one of the six curriculum priorities. These priorities include the production and dissemination of curriculum packages which will increase students' knowledge, interest and participation.

The key to adult participation in Lifetime Sports is proper instruction when a person is young. The best way to do this is as a part of the regularly scheduled physical education classes in school. Appendix C, *Some Implications* includes data from the National Adult Physical Fitness Survey.

A developmental program is based upon comprehensive readiness experiences in the elementary school. A variety of Lifetime Sports is introduced at the junior high or middle school level. During the senior high school years students have the chance to develop skills in programs they select.

Program Progression


KINDERGARTEN THRU 5
Students are involved in movement exploration, fundamental locomotor movements, body management activities, ball and object handling practice, rhythm and dance, traditional and creative games.
6 THRU 9
Students are involved in skill and social development in team sports and dance, aquatic experiences, individual sports, orientation or exploratory programs in Lifetime Sports.
10 THRU 12
Students are involved in experiences in choreography, new games and movement form, advanced levels of team sports, survival aquatics and intermediate and advanced levels of Lifetime Sports.

ELEMENTARY

The physical education program in the elementary schools is of key importance in education for leisure. Physical activity experiences during the formative years will do much to insure continued participation in later years. The elementary physical education program contributes to the recreational or Lifetime Sports competence of children in the following ways:

1. It develops and improves organic fitness through activities which emphasize skipping, hopping, crawling, running and climbing.

2. It teaches basic neuromuscular skills, contributes gross motor development and provides perceptual motor activities through movement education experiences.

3. It teaches specific games and sports skills – through lead up activities – – have the potential to be enjoyed for a lifetime.

4. It develops favorable attitudes toward play and sportsmanship through activities and games emphasizing dual and team interaction.

JUNIOR HIGH, MIDDLE SCHOOL

The junior high and middle school physical education program should continue to improve fitness and develop basic skills. It should provide an exploratory program that familiarizes students with enough activities for them to choose those which will interest them for the rest of their lives. Interest is stimulated by offering minicourses which emphasize introductory activities rather than fine skill development.

SENIOR HIGH

Competence development should be the goal of Lifetime Sports education in the senior high school. Students should be allowed to choose their own activities and to study two or more in depth. A greater opportunity for learning is provided when the students' interests are matched with their selected activities.

Researchers have proven there are benefits to be derived from participation in in activity and sports. All human beings -- male and female -- should have an equal opportunity to reap these benefits. If involvement in sports can be understood and evaluated rather than sex-stereotyped, great strides can be made toward achieving Lifetime Sports participation.

In a tentative framework for physical education appearing in the 1973 *Curriculum Handbook for School Executives* by the American Association of School Administrators, three goals for senior high school physical education were recommended: (a) understanding and appreciation of human movement, (b) physical fitness, and (c) Lifetime Sports competence. Students are expected to demonstrate achievements in each of these areas.

In the handbook's suggested senior high model, competence in at least two Lifetime Sports is required for graduation. Competence standards are set by appropriate testing of ability to participate at an intermediate skill level, as, for example, a particular bowling handicap, a standardized minimum archery score or an appropriate competitive classification in tennis.

The student is free to select any of the Lifetime Sports activities offered through a Student Selected Physical Education program (a program whereby students are given opportunities to select their activities from physical education offerings within the required curriculum at the Junior-Senior High School). The graduation requirement insures that the student will have met designated standards in at least two sports. Additional information for selected physical education is contained in Appendix D. *A High School's Physical Education Curriculum: with Elective Scheduling.*

the students as they progress. Contracting activities provide another avenue for staff utilization as described in Appendix E, *Contracting: An Approach to Providing Flexibility in the Physical Education Program.*

SCHOOL AND COMMUNITY

Gone is the era when education could consider its obligation to the community fulfilled with the closing of the doors at the end of a school day. Schools should be as active in meeting the needs of the community as local churches and industries. As the community shares in recreation and sports facilities of the school, whether they be tennis courts, swimming pool, gymnasium and fields, the school may also need to look to the community for facilities to provide a

The handbook states that school children need physical education to help them become fully functioning adults.

ADMINISTRATION AND STAFFING

Implementing a Lifetime Sports program in the physical education curriculum may appear to require additional staff for instruction and supervision of the activities. This is not the case. As Lifetime Sports are introducted, adoption of teaching methods for large groups may free staff for involvement at other levels of instruction.

Learning packages may be prepared to guide comprehensive Lifetime Sports program. Such facilities might include: skating rinks, ski slopes, bowling lanes, trap and skeet ranges, rifle ranges, indoor and outdoor pools, bikeways, indoor and outdoor tennis courts, golf courses, city and state parks, waterways and local college and university accommodations.

Utilization of community resources is a wise practice. Administrators and physical education staff should not assume all education takes place within the school plant. Distributive education, cooperative programs and field experiences have stood the test of time in establishing their credibility and worthiness.

The physical education administrators and staff must be aware of and sensitive to community relations if outside resources are to be considered. If the school and the community respect each other mutual benefits can be realized.

The goal of the physical education program is to improve the quality of life for all members of society. Instructional procedures should focus on the growth and self-actualization of the individual. Responsible leadership of physical educators and school administrators will provide each student with the opportunity to participate in Lifetime Sports and activities.

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APPENDIX A

Physical Activity for Positive Health

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INTRODUCTION

The increasing inclusion of vigorous activities in lifetime sports is a welcome expansion.

Energy for physical activity can be supplied aerobically and/or anaerobically. Although both types of metabolism may be occurring, most of the energy for submaximal activities is supplied by the more efficient, pay as you go, aerobic methods.

CLASSIFICATION OF ACTIVITIES

The total energy expenditure is one of the important factors in reducing fat and increasing cardiovascular function. It is one of the ways that activity can be classified. Thus light, moderate, and strenuous activities refer to the number of calories burned while engaging in those activities. It should be noted that much of the caloric cost data are based on a small number of subjects. In addition, individuals differ with regard to caloric cost due to size, weather, competition, nature of the activity and other factors. Thus, this type of classification is useful as a guide to the relative costs of activities, but would include some error in the absolute number of calories burned for any individual in any particular activity. (See Table A).

PURPOSES FOR ACTIVITY

The amount, intensity, frequency, duration, and type of activity will depend on the purpose one has in being active.

Fun

Most of the emphasis at this institute is on ways of enjoying physical activity in a variety of ways. Frankly, if we had done our job well in our society, that could be the only emphasis. Physical activity is one of the most important and enjoyable aspects of young children's lives. Yet, somehow, many older children, youth, and adults have negative attitudes toward activity.

Why do children's enjoyment of activity change? Perhaps part of it is due to using physical activity as punishment (running laps for *inappropriate* behavior). Part of it may be due to undue emphasis on competition at high levels, rather than an emphasis on equal competition at all levels of skill. Mosston (1970) may have part of the answer when he points out that we use procedures which exclude children from activities, rather than including them. Barry may have part of the answer when he points out that schools and society have changed naturally abstract perceivers to concrete perceivers, as he has found in his cardiac patients. Perhaps the actions and attitudes of parents and other adults makes them *realize* that activity is *not important*.

In any case, this conference is aimed at helping people enjoy physical activity. The more we succeed in that goal, the less important it will be to have separate physical fitness programs. To the extent that we fail in helping people be active for the fun of it, we will continue to need activity programs for other purposes.

Longevity

The least important reason why people are active is to increase the quantity of life. There is some indirect evidence, however, that regular activity appears to be one of the factors associated with longevity. Haskell (1972) has an excellent review of the different amount of activity necessary to achieve different cardiovascular goals. In general, we found that small amounts of activity placed persons in *low risk* groups. Moderate amounts of activity caused some improvement in cardiovascular efficiency. Larger amounts of activity were necessary for reduction of *risk factors*.

Thus, if you're interested in moving from the *high risk* inactive group to the *low risk* active group, this can be done quite easily. Walk up stairs; walk or cycle to work or around the neighborhood regularly.

Better Performance

Another reason people engage in physical activity is to do something else better. Sportspersons and athletes condition themselves for better performance. Military personnel train to perform their functions. Others are active to be more efficient in the daily round. Some are active to reduce risk factors associated with cardiovascular disease.

The steps in selecting activity for these goals is straight forward; namely, (1) identify the elements important for success in the activity; and (2) improve those elements with activities similar to the desired performance.

In general, training is specific. The best way to improve in skill is to practice the performance, and improve those aspects of performance and fitness that are essential to the activity.

OPTIMAL FITNESS

In my opinion, the most important reason to be active is to strive to be fully human in the best sense of the word. To have keen and curious minds; to be able to relate to others in warm and meaningful ways; and to have the physique, energy, and skill to accomplish these and other reasons for living is to have optimal fitness, or quality of life. Although the mental, emotional, and physical aspects cannot be separated in persons, this paper will deal only with the physical aspects of fitness. In addition, it will deal only with the physical activity aspects of physical fitness.

PHYSICAL FITNESS - MULTIFACTORED CONCEPT

One needs high levels of all aspects of physical fitness in order to have the potential to achieve optimal quality of life. One has only to compare the normal aging curve with the aging curve of active individuals to see the potential for increased quality of life.

Many times physical fitness is portrayed as a single characteristic of a person which can be measured by one best, but physical fitness is a multi-factored concept that includes many components.

General Component

There is a general component of physical performance and fitness. The evidence for this is that there is a positive relationship (correlation) among performances on nearly all tests of human ability. Unfortunately, this component is probably much smaller than once thought and does not account for enough variance to be useful in prediction of the various components.

Large Group Components

Four major areas have been identified relative to performance and fitness: body composition, efficiency, endurance, and skill. Each of these components can be divided into smaller groups; each smaller group can be sub-divided further, etc., until there would be specific items for specific parts of the body.

Body Composition

Body composition is important for its contribution to the attractiveness of the appearance of the body, positive health, and physical performance. Some would prefer to have body composition as a separate component above the other three major components of performance and fitness. It affects efficiency, endurance, and skills. In fact, many *fitness tests* are made up of test items that are administered and scored in such a way that obese persons are penalized in all the tests–for example, other things being equal, an obese person will be able to do fewer pull-ups and dips; run slower in sprints, shuttle and endurance runs; jump a shorter distance (vertically or horizontally). This if the body composition is not taken into consideration one might be rated *poor* in power, muscular and cardiovascular endurance, speed, and agility simply as a result of obesity. In addition, many of the absolute measures of strength (e.g., pounds of force for a particular muscle group), pulmonary function (e.g., vital capacity in liters), and metabolism (e.g., oxygen consumption in liters/min) reflect primarily the size and composition of the person. Since body composition is such an influential component, we have chosen to separate it and recommend that other components of performance and fitness be scored in such a way as to partial out the effects of body composition when possible.

Size. Two aspects of body composition would be the length and circumference of various segments of the body. Length appears less susceptible to change by environmental stimuli (although activity in early childhood may have more effect than has been generally assumed). The circumference will reflect the size of the bones, muscles or fat depending on where it is taken. For example, the circumference of the wrist reflects the size of the bones; the upper arm, muscle; and the abdomen, fat.

Weight. Weight and overweight continue to be widely used, however, the division of weight into fat and non-fat weight would greatly enhance the interpretation of weight. The degree of over-fatness (obesity) is more highly related to positive health than the degree of overweightness. The amount of lean body mass (active tissue) is an important aspect of performance.

Proportion. When comparing the changes made by an individual, the measures of size and weight can be used directly. Comparison of individuals and interpretation to aspects of body composition is enhanced by various ratios rather than direct measurement. Per cent fat (per cent of total body weight that is fat) is easier to use and interpret than the number of pounds of fat since the per cent takes the total body weight into consideration. The same amount of fat weight might be 10% of the body weight for one person and 30% for another. A less informative ratio is the relation between height and weight--various indices involve this ratio. The length and circumference of various segments of the body are also more easily interpreted when viewed in terms of other segments. Thus the length of one part of a limb might be expressed in terms of the length of the whole limb. The circumference of one flexion of the trunk might be used in relation to the circumference of other flexions of the trunk.

In other words, although the size and weight is measured directly, it is easier to evaluate these values by using ratios. One word of caution should be inserted about using ratios to evaluate changes in an individual. There are several possible reasons for a change or lack of change. For example, per cent fat could be decreased by: (1) an increase in lean body mass with no change in fat; (2) decrease in fat with no change in lean body mass; (3) an increase in lean body mass with a decrease in fat. The evaluation of the program that brought about the change would be different depending on which of the

three combinations caused the decrease in per cent of fat. Likewise, no change in per cent fat could be caused by: (1) no change in fat or lean body mass; (2) increase in both; (3) decrease in both. Again the evaluation of the lack of change would depend on what actually happened to the fat and lean body mass. If there are this many possibilities for a simple ratio involving only two variables, consider the number of possible explanations for more complex indices that combine several tests into one index!

Efficiency

The second major component of physical performance and fitness is the ability to function efficiently. Efficiency is optimal performance with minimum effort. Although efficiency normally emphasizes the minimum effort (in terms of energy, movement, etc.), the performance cannot be ignored. For example, it would be tempting to say that a person who ran 100 yeards with less energy expenditure is a more efficient runner. however, if it took him 15 seconds longer to run it, it would hardly seem a desirable trait. Thus to measure efficiency, one normally tries to equalize the testing conditions.

Rest. Lying in bed, sitting at a desk, and standing at a counter are not normally associated with *performance*, but there are many internal activities going on continually in these situations. Since much of a person's time is spent in relatively inactive conditions, the ability to function efficiently in resting conditions is an important part of one's health. One way to judge a person's efficiency at rest is to measure physiological functions while the person is in a resting state using tests of the circulatory, respiratory, hormonal, and nervous systems. Persons in physical education and medicine have long used tests taken in relatively inactive conditions as an indication of a person's health and fitness.

Response to Change. Another aspect of efficiency is the ability to adapt to external stimuli or stressors, whether physical, mental, or emotional. The same variables used at rest can be measured during and after standard amounts of stressors to determine change. This may be interpreted as the ability to adapt to that stressor. There is, of course, more involved in response to external changes than simply the physical condition of the person. The level of physical fitness, personality (e.g., anxious persons tend to have a lower threshold to stress), and the nature of the situtation (how threatening it is to the person) all interact in producing response to stressors. Although it can be stated that the most efficient person can accomplish whatever is required by the situation with the least change from resting conditions, we should account for all the factors that are present.

Endurance

One of the elements involved in success in many physical activities is the ability to continue to perform over a relatively long period of time. This involves a minimum decrease in the level of performance. Endurance can be divided into muscular and cardiovascular endurance.

Muscular. Muscular endurance is an important consideration for many tasks. The specific muscle group involved varies widely with different activities. The need for endurance also varies with the nature of the activities. Although muscular endurance is not all that is necessary for long-distance swimming, running, cycling, cross-country skiing, rowing, etc., it is obviously a prerequisite for success in such activities. It would be much less important in running or swimming sprints--in general, its importance is directly proportional to the amount of time spent in the activity.

Cardiovascular. Cardiovascular endurance is the ability to continue activities that tax the cardiac, circulatory and respiratory functions. It is measured by two types of test: (1) measurement of functions of the body related to the heart, lungs, and circulation during hard work; and (2) performance scores from endurance events (e.g., time in a two mile run). The first type of test has the advantage of measuring the functions related to cardiovascular function of the body, is generally less influenced by motivation, and can determine the various elements that

contributed to the performance. The performance test assumes that persons who can perform better on endurance events do in fact have better cardiovascular endurance. This second type has the advantage of looking at the whole performance and it is easily administered and scored for large groups.

Two types of work tasks have been widely used in accessing cardiovascular endurance (regardless of whether the function or performance is measured); namely, tasks where the body weight is supported, such as work done in supine or sitting positions and tasks, where the body weight must be supported during the work, such as running, bench stepping, hopping.

The results of some tests have been expressed per unit of body weight (or per unit of lean body mass). Although this helps compare and interpret some measures whose absolute score reflects primarily body composition, the same precaution about ratios must again be stated. To illustrate the point, let's consider the commonly used maximum oxygen consumption, expressed in ml/kg of body weight. Assuming that one has considered the many factors that could have influenced oxygen consumption (heart, lungs, oxygen transport, condition of the muscles involved, etc.) and the factors influencing body weight (fat and non-fat weight), then there are still three possibilities for any increase, decrease or lack of change in the ratio (ml/gk) that must be considered before evaluating the change.

Skill

Body composition efficiency and endurance influence one's ability to perform various physical activities. There are additional underlying skills related to performance and many physical activities, such as agility, balance, strength, and flexibility. In addition, there are specific skills that are part of any one physical activity or game. These involve interaction with various rules, facilities, equipment, cooperation and/or competition with other individual(s). Another aspect of skill performance is the medium in which the skill is performed. Obviously, performing on land, in the water, and in the air (in or out of gravitational pull) are three very different *ballgames*. Participation in some activities (such as most of the field events in track and field) require skills in more than one medium. (The weekend golfers who rarely hit the golf ball farther than 200 yards were encouraged by the future possibilities in another medium as evidenced by Shepard's six iron on the moon which traveled several hundred yards.)

Underlying. We have grouped certain skills together that seem to influence many activities, however, these skills are relatively independent of each other since they are not necessarily highly related. The skills included in this category are: (1) agility, the ability to move quickly in different directions from different positions; (2) balance, the ability to maintain equilibrium at rest and during a series of prescribed movements; (3) flexibility, the range and ease of movement of joints, and (4) strength, the amount of force exerted.

Although we have used the term agility a related concept is response time. Response time is the time to perform a certain movement as quickly as possible after a certain stimulus. A dash in track would be one example of response time. It can be divided into pre-motor (time from stimulus until beginning of muscular action), motor (time from beginning of muscular action to beginning of movement) and movement time (time from beginning of movement until the desired response is accomplished). The first two parts of response time (pre-motor and motor) are also called reaction time; thus response time equals reaction time plus movement time. In most cases, the movement time is the more critical. However, the reaction time obviously has a larger part in very short movements.

Static balance is the ability to remain in one position without moving, whereas dynamic balance is the ability to perform a series of movements in a prescribed way (walk a line, turn, jump, hop in a certain sequence). Static flexibility is simply the range of motion of a joint, whereas dynamic flexibility is the ease of movement within that range. Static strength is the amount of force that can be

exerted from one position. Dynamic strength is the amount of force throughout a range of motion. Power is dynamic strength per unit of time.

Games. There are many ways to classify games: the number playing the game; the type of equipment used; the expected rewards from the game; the medium in which it is played; the caloric cost of playing it, perceptions involved, type of competition, etc. We have chosen to classify games according to whether played by individuals or teams and on how success is measured. Thus we have (1) the *individual* compared with his own performance (a world champion trying to beat his own record, or a weekend golfer trying to break 100 for the first time; (2) an individual compared with another individual (the world champion trying to win the event, or the golfer trying to beat an opponent); (3) a *group* compared with itself (a relay team trying to better its best time); (4) a group compared with others (a team trying to beat another team).

There are an almost limitless number of physical activities that could be listed under each of these divisions. As illustrated in the golf and track examples above some activities can appropriately be placed under more than one division depending on the motives of the participant. This component of a person's physical performance and fitness can be evaluated directly according to his ability to accomplish the goal for a specific activity. In addition, the elements that are involved in a good performance of a particular activity can be identified and measured (objective and/or subjective assessment).

Socio-psychological Influences

There are influences from outside and within a person that determine much of his life style. These extra - and intra-individual influences may facilitate or hinder one's physical performance and fitness. One of the recent advances in physical education research has been the attention given to the sociological and psychological aspects of performance and fitness.

Extra-individual. The type of physical activity participated in by a person appears to be highly related to his culture and various sub-cultures, such as family, peers, socio-economic class, school, other institutions, and geographical location. Resultant differences in type and amount of physical activity effect body composition, efficiency, endurance, and skill.

Specific environmental conditions may also alter one's performance at any one time. Performance may be affected by such things as number and type of spectators; the reactions of others to one's performance; the nature of the contest or activity; and the ability of the opponent.

Intra-individual. All people have certain basic drives. Inability to fulfill any of these basic needs causes that need to become a primary goal for an individual. For example, food is the main focus of a person who is hungry. If the basic needs are fulfilled, then the person *selects* certain goals from his enviornment and internalizes them so that they become his goals. These goals are viewed as giving meaning to his life and are the criteria used for making decisions. The processes by which these goals are selected and the most important factors influencing such decisions are questions which have been and will continue to be widely debated. The life style that results from particular goals will be related to physical performance and fitness.

Interaction. These two influences (extra - and intra-individual are not completely independent. The outside influences certainly affect the selection of the internalized goals. In addition, the extent of the extra-individual influences on a particular performance will depend on the type of intra-individual variables operating at the time.

The components of personality are good examples of the interaction between extra-and intra-individual influences. Personality is basically the interaction between a person's goals and his relation to other persons and situations. Many of the components of personality seem to include both situational and long-term aspects. For example, although a person may normally be somewhat withdrawn (introverted), in certain situations he will be quite out-going (extraverted).

EFFECTS OF REGULAR PHYSICAL ACTIVITY

Regular, vigorous physical activity can achieve the following changes in children and adults of both sexes:

Decrease fat, increase lean body mass, and *decrease % fat.*
Increase efficiency of the circulatory, hormonal, neuromuscular, and respiratory systems at rest and in response to physical stressors (perhaps also emotional stressors).
Increase muscular and cardiovascular *endurance* and performance.
Increase agility, flexibility, and strength.
Reduce anxiety in highly anxious.
Increase ability in games and sports related to these fitness components.

The improvement in these areas enhances the *quality of life* by providing energy, efficiency, and skill. Regular, vigorous physical activity also *reduces risk factors* associated with cardiovascular disease, as evidenced by reduction in fat, cholesterol, blood pressure, and anxiety especially in those persons who start with high levels.

PRESCRIPTION OF ACTIVITY

To obtain optimal physical fitness, one should achieve high levels of all components of performance and fitness. Some components may be more important for certain persons; some components are easier to improve; however, a good fitness program will pay some attention to each component.

General Recommendations

For a thorough review of the factors that influence training, see Pollock's chapter (1973). There are a few general suggestions that can be made to anyone starting to participate in regular physical activity.

Be regular. One of the reasons, this paper is appropriate for this institute is because to be beneficial, it must be part of your way of life. Important gains made through physical activity over weeks, months, or years are quickly lost through inactivity.

Start slow. Since it is a part of your way of life, there is no need for discomfort and pain in order to reach a peak in a few weeks. Start slow, allow your body to adjust gradually to activity. It will be more enjoyable, more likely included as a part of everyday life, and there will be fewer problems. Most of the bad effects of activity come from too much too soon.

Progress. As adaptation to activities is achieved, increase the level of participation and the amount of energy expended. Continue the progression for several months until it would take a disproportionate amount of time neglecting other aspects of life to reach higher levels of fitness.

Warm-up. Whether interested in safety or performance, the evidence strongly favors warming-up before any type of activity (see Warm-up chapter in Morgan's book, 1972). Walking and stretching are good general warm-up activities. Direct warm-up similar to the activity to be engaged in but at lower velocities is recommended.

Taper-down. It is more stressful immediately *after* strenuous activity than during activity if one stops abruptly (see Wiley, et. al., 1969). Both high intensity testing and activities should be followed with light intensity activities. Walking is particularly recommended since the leg muscles continue to pump the blood back to the heart.

Type of Activity

In general, body composition, cardiovascular efficiency and endurance are enhanced by endurance activities that expend large amounts of energy. Activities such as running, swimming, cycling, cross country skiing would be recommended. Muscular endurance is increased by having the appropriate muscle groups engage in

repetitious activities throughout the desired range of motion against resistance. Skills are improved with specific activities designed to improve each.

Frequency

Three or four days per week are recommended for a beginning program. The work a day, rest a day routine recommended by Cureton has been validated in numerous studies. Less than three days per week appears insufficient to make changes in all components of fitness. After adaptation to training, persons may find the frequency appropriate to increase or maintain desired levels of fitness.

Total Amount of Energy

Although more research is needed in this area, Cureton's recommendation of 300 to 500 calories per work-out appears to be a reasonable target. It may take persons who are sedentary several weeks to build up to that level. In addition, most persons will want to progress beyond that amount after adjusting to regular physical activity.

Intensity and Duration

The intensity and duration obviously interact to achieve the total energy expended for any one session. In general, it is recommended that the intensity range from 50 to 90% of ones maximum. If one goes below 50%, the amount of time necessary to achieve the total amount of work quickly becomes prohibitive and there is some evidence that this may be below the training threshold necessary for significant changes in some components of fitness. On the other hand, there is not advantage in going *all-out* (100% max)--excellent improvements are possible at less than maximum intensities. Maximal intensity (unless desirable for a particular goal) does not appear to enhance the improvements made and may cause problems.

As seen from the classification of activities, the duration necessary to achieve 300 calories per work-out will range from 30 to 90 minutes for strenuous to moderate activities. My advice is to work longer at lower intensities especially at the beginning of a program, then gradually increase the amount of work that can be done within the same time period.

If one works out at the same intensity, a natural progression occurs. If a certain % of maximum heart rate were used, then persons in poorer condition would do less work at that intensity. As they improved, they would do more and more work at same heart rate. This method of prescribing activity allows for initial differences and has a built-in progression.

Rule of Thumb

An educated guess (based on evidence but including some error) for a beginning activity program designed to improve the components of physical fitness would include the following:

10 minute warm-up of walking and flexibility exercises
45 minutes of endurance activity at 75% of maximum, and strength exercises,
and activities aimed at improving specific skills
10 minutes of taper-down; walking

One way to estimate maximum heart rate is to subtract age from 220. Then 75% of that value can be determined. The intensity of activity to achieve the target heart rate (75% of max.) can be determined by counting heart rate for 10 seconds immediately after exercise and multiplying by 6. Adjustment in the 45 minutes for the main body of the work-out can be made by estimating the number of calories expended by the activity that results in the desired training heart rate.

SUMMARY

Regular, vigorous physical activity is an important Lifetime Sport. Activities can be classified from low to strenuous according to their energy requirement.

The reason for being active will determine the appropriate aspects of physical

activity. Having fun through physical activity is one of the important goals, but we have failed with many people in this area. Longevity has been associated with regular light activity at work and home. Ability to perform better at work or in games and sports can be developed through specific activities aimed at the important elements of the specific performance.

Regular, vigorous activity can be one means of enhancing the quality of life by causing improvements in all components of physical performance and fitness. Five major components are body composition, efficiency, endurance, skills, and socio-psychological aspects. To achieve improvements in all these components, it is recommended that a fitness program include activities designed for the components, on a regular basis, started at low levels, progressiviely increased, with a warm-up and taper down, at least 3 days/week, between 50 and 90% of maximum and expend at least 300 calories per work-out.

More definitive exercise prescription awaits further research.

TABLE A*

ENERGY COST OF ACTIVITY (In Calories)

Intensity of Exercise	*Hour*	*1/2 Hour*	*Per Minute*
Low	70-150	35-74	1.17-2.49
Mild	150-299	75-149 1/2	2.5-4.99
Moderate	300-449	50-224 1/2	5.0-7.49
Moderate High	450-599	225-299 1/2	7.5-9.99
High	600-749	300-374 1/2	10.0-12.49
Very High	750 +	375 +	12.5 +

	Hour	*1/2 Hour*	*Minutes*
LOW	70-150	35-75	1.17-2.15
Sleeping	70	35	1.17
Lying Quietly	80	40	1.33
Sitting	100	50	1.67
Mental Work--Seated	105	52 1/2	1.75
Standing	110	55	1.83
Sitting (Handwork)	120	60	2.00
Driving a Car (Pleasure)	140	70	2.33
Sailing (Calm Water)	141	70 1/2	2.35

	Hour	*1/2 Hour*	*Minutes*
MILD	150-300	75-150	2.5-5.0
Pool	162	81	2.7
Horseback Riding (walk)	170	85	2.83
Airplane Flying	175	87 1/2	2.91
Walking 2 mph	192	96	3.2
Motorcycling	204	102	3.4
Bricklaying	205	102 1/2	3.41
Hiking—40 lb. Pack 1 mph	210	105	3.5
House Painting	210	105	3.5
Gardening	220	110	3.67
Carpentry	230	115	3.83
Canoeing	230	115	3.83
Horseshoes	230	115	3.83
Bicycling 5 1/2 mph	240	120	4.0
Dancing (mod.)	250	125	4.1
Golf	250	125	4.1
Lawn Mowing (Power)	250	125	4.1
Domestic Work	250	125	4.1
Walking 2 1/2 mph	256	128	4.27
Bowling (Continuous)	270	135	4.5
Hiking—40 Lb. Pack—2 mph	270	135	4.5
Mowing (Hand)	270	135	4.5
Softball-Baseball (Not Pitcher)	280	140	4.67

	Hour	*1/2 Hour*	*Minutes*
MODERATE	300-449	150-224 1/2	5.0-7.49
Rowing 2 1/2 mph—Pleasure	300	150	5.0
Fencing	300	150	5.0
Hiking 2 1/2 mph (20 lbs.)	300	150	5.0

ENERGY COST OF ACTIVITY (In Calories) – Continued

Intensity of Exercise	*Hour*	*1/2 Hour*	*Per Minute*
Walking 3 mph	300	150	5.0
Swimming Crawl 20 yd/min.	300	150	5.0
Breast 20/yd min.	300	150	5.0
Back 25 yd/min.	300	150	5.0
Archery	312	156	5.2
Hiking 3 mph–20 lbs.	312	156	5.2
Walking 3 1/2 mph	315	157 1/2	5.25
Weeding	336	168	5.6
Hiking 3 mph–40 lbs.	348	174	5.8
Walking 4 mph	348	174	5.8
Badminton (Recreational)	350	175	5.83
Volleyball (Recreational)	350	175	5.83
Skating (leisure) Ice & Roller	350	175	5.83
Table Tennis	360	180	6.0
Hiking 3 1/2 mph–20 lbs.	380	190	6.33
Baseball Pitcher	390	195	6.5
Pick and Shovel	400	200	6.67
Horseback Riding (Trot)	415	207 1/2	6.93
Canoeing 4 mph	420	210	7.0
Square Dancing	420	210	7.0
Swim Crawl 30 yd/min.	420	210	7.0
Tennis (Recreational)	426	213	7.1
	Hour	*1/2 Hour*	*Minutes*
MODERATE HIGH	450-599	225-299 1/2	7.5-9.99
Chopping Wood	450	225	7.5
Swimming Breast 30/min.	450	225	7.5
Back 30/min.	450	225	7.5
Hiking 4 mph (20 lbs.)	450	225	7.5
Walking 4 1/2 mph	480	240	8.0
Sawing	480	240	8.0
Farming, Planting, Hoeing, Raking	480	240	8.0
Water Skiing	480	240	8.0
Digging & Shoveling	500	250	8.33
5 BX–Chart 1A	510	255	8.5
Hiking 40 lb. 4 mph	540	270	9.0
Polka Dancing	540	270	9.0
Swimming Back 35/yd	540	270	9.0
Side 30/yd	550	275	9.17
Boxing (Sparring)	550	275	9.17
Skiing (Downhill)	594	297	9.9
	Hour	*1/2 Hour*	*Minutes*
HIGH	600-749	300-374 1/2	10.00-12.49
Badminton (Competitive)	600	300	10.00
Hill Climbing	600	300	10.00
Handball	600	300	10.00
Swimming Breast 40/min.	600	300	10.00
Mountain Climbing	600	300	10.00

ENERGY COST OF ACTIVITY (In Calories) – Continued

Intensity of Exercise	*Hour*	*1/2 Hour*	*Per Minute*
Orienteering	600	300	10.00
Soccer	600	300	10.00
Tennis (Competitive)	600	300	10.00
Volleyball (Competitive)	600	300	10.00
Basketball	608	304	10.13
Football (Playground)	611	305 1/2	10.18
Squash	612	306	10.2
Fencing	630	315	10.5
5BX–Chart 2A	640	320	10.67
Skating (Vigorously)	640	320	10.67
Walking 5 mph	660	330	11.0
Bicycling 18 mph	660	330	11.0
Running 5.5 mph	660	330	11.0
Swimming Side 40/yd	660	330	11.0
Back 40/yd	660	330	11.0
Rowboating 3.5 mph	660	330	11.0
Jogging	660	330	11.0
Swimming Crawl 45/yd	690	345	11.5
Parallel Bars	710	355	11.83
Running 7.2 mph	720	360	12.0
Skiing on Level 5 mph	720	360	12.0
Swimming Butterfly Stroke	720	360	12.0
	Hour	*1/2 Hour*	*Minute*
VERY HIGH	750+	375+	12.5+
Wrestling & Combatives	790	395	13.17
Swimming Back	800	400	13.33
Running 8 mph	825	412 1/2	13.75
Swimming Crawl 55/min.	840	420	14.0
Sculling Racing	840	420	14.0
Running 8.7 mph	900	450	15.0
5BX–Chart 3A and 4A	960	480	16.00
Rowboating (Racing)	970	485	16.17
Rowing Machine Very Vig.	972	486	16.2
5BX–Chart 5A and 6A	1080	540	18.00
Cross Country Skiing	1200	600	20.0
Running in Place 140 counts per min.	1500	750	25.00
Swimming Crawl 65 yd/min.	1600	800	26.67
Running in Place 160 counts per min.	1800	900	30.0

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APPENDIX B

Fitness:
The Hidden Health Factor

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Excerpts from a speech given for the Presidents Council on Physical Fitness and Sports, Oct. 5, 1972

FITNESS: THE HIDDEN HEALTH FACTOR*

by Lawrence E. Lamb, M.D.

There is probably no other group who can do more for the nation's health than the people gathered here today and the organizations you represent. This is because the picture of health and medicine has changed drastically in our modern society. The leading causes of death and disability today are no longer infectious illnesses caused by germs but rather the products of our way of life. Our living habits are largely responsible for the fact that over half of all the deaths in the United States from all causes, including accidents, are from heart and vascular disease and that the vast majority of these illnesses are caused by blockage of arteries with fatty deposits. This process is called atherosclerosis.

Fatty deposits block arteries that feed blood to the brain, heart, kidney, legs, sexual system and all the parts of the body. Our citizens at the birth of our nation were more fit in almost every way than we are today. I used the term *fit* in its broadest concept to mean adequate levels of physical activity along with good health habits, which include avoiding obesity, cigarette smoking, excess use of coffee and other drugs accepted as part of our daily living. The reason for the changes in the health of our society are not new stresses of modern civilization but the harmful habits that go with our civilization.

We hear a lot about personality factors as a major determinant of our health problems. While they are no doubt important, clearly history points out that personality factors can not be the main consideration. It is popular in some circles to classify individuals as having type A or type B personalities and that the A *go getters* are prone to heart disease and the B *slobs* are free of the ills of modern life. This concept runs into trouble when we consider the well established fact that heart attacks caused by fatty blockage of the arteries to the heart were unknown to the medical profession before 1900. This was not because the doctors failed to recognize them but because such events were so rare. Today this is the leading cause of death in our society. Are we then to assume that before 1900 our society was devoid of *go getters,* I think not. Certainly the men who founded this country were not unambitious, easy going, unruffled personalities and yet they were free of these problems.

To illustrate my point let's take one occupation representing the ultimate in executive responsibility and stress of society, the Presidency of the United States. Presidents used to be a lot healthier than they have been in recent years. In medical circles we often point to the fact that the fifty-year old men of Cyprus have a life expectancy of 83 years while our fifty-year old men have an average life expectance of only 70 years. BUT this has not always been the case as exemplified by our early presidents. If you exclude the presidents who have been assassinated and George Washington (who was assissinated by medical ignorance from the practice of bleeding common in those days) our first presidents from Adams to Van Buren lived from 73 to 90 years of age with an average span of 81 years--not greatly different from the life expectancy of the present day middle aged Cypriot. The presidents from Harrison to Franklin Roosevelt (excluding those assassinated) lived an average life span of only 66.7 years. Only three of these presidents lived longer than the shortest-lived presidents in the first group of seven men.

To point up sharply the role of atherosclerosis or fatty deposits in the arteries as a health factor we need only look at the history of the presidents beginning with Woodrow Wilson. Excluding President Kennedy, because of assassination, in the past half century 75 per cent, six out of eight, of the presidents of the United States had atherosclerotic disease, causing strokes, heart attacks, and death. Most likely Harding's unexplained death was the result of his known heart disease, and if so, four or half of these eight presidents in the past fifty years had a stroke or heart attack while in office. This is indeed a marked change from the health picture of our early presidents and it reflects what has happened to our nation as

a whole. We haven't suddenly become a nation of *go getters* with new levels of drive, interest, ambition, and different personality structures than our forebearers. but our life style has changed. We have added horseless carriages, cigarett smoking, increased consumption of coffee. eaten more rich food, and become physically less active. In short our fitness level has deteriorated.

If we are able to regain the essential elements of the lifestyle that provided a greater level of fitness and freedom from our civilized diseases, the health picture in our nation can be vastly improved, representing the combination of the dramatic successes in medicine over the past two centuries, such as control of infectious diseases, plus the health of robust living characteristic of our forebearers.

The change in health pattern in the Presidents of the United States is mirrored a thousand fold in the executives in our leading industries, and the health of all our citizens. The good life is within the reach of all and the consequence of its undisciplined pursuit is atherosclerosis. The problems we have in medicine today have changed drastically. In 1900 the leading cause of death was tuberculosis. Heart attacks caused by atherosclerosis were unknown. Heart disease was then caused by syphilis, rheumatic fever, high blood pressure, and a host of infectious diseases. Although atherosclerosis did exist it was not sufficiently externsive to cause the amount of damage we see today. You may recall that 500 years ago Leonardo da Vinci examined a man over 100 years of age immediately after dealth and his drawings show a small amount of atherosclerotic change in the lower part of the large artery in the body, the aorta. The few health problems caused by atherosclerosis were usually from strokes, also associated with high blood pressure. Thus, atherosclerosis as a major health hazard is a relatively new problem.

Supporting the concept that our living habits are a major consideration in the uncontestable evidence that many parts of the world are still free of these forms of disease. Where the diet is lower in calories, the physical activity is maintained, and cigarettes are uncommon, atherosclerotic problems are non-existent or rare, even in the older members of those societies. Almost without exception when individuals from these societies develop our living styles they too develop our health problems. Further evidence is found in the observation that individuals from our culture, forced to adopt a more Spartan existence, cease to have these medical problems. The incidence of heart disease dropped dramatically in Europe during WWII in the general population of occupied countries who had less to eat and in prisoners of war. The disease flourished again with the affluent years in the post war period.

These illnesses do not confine themselves to old age. They do affect the young. I have treated men as young as 20 years of age with acute heart attacks. The battle casualties of Korea showed that nearly 80 per cent of the men of an average age of 22 had gross fatty deposits in the arteries to the heart and 10 per cent of them had over three-fourths of one of their major arteries blocked with fatty deposits. In 100,000 men age 40 to 44 in the United States, 1,877 of them die each year from atherosclerotic heart disease. Clearly we are dealing with a health problem of major proportions and it extends to all levels of our society. BUT many of these problems can be prevented. The key to preventing a major portion of them is to live more like our early presidents did, which increases the level of fitness.

We place a lot of emphasis on heart attacks because they are so common and everyone knows what they are. However, there are other common disorders also caused by lack of fitness as related to atherosclerosis. One of these we all hope to avoid is disease of the brain. Strokes are caused by the same process in the arteries that causes heart attacks. The only difference is that the arteries affected are in the brain and not in the heart muscle. No one wants to become a cripple because of a stroke or to become senile because the brain is starved for circulation. This, of course, was the problem of President Wilson.

Aside from the more obvious strokes there are smaller changes in the brain caused by plugging of a small artery. The victim may not show any discernible evidence of ill health. Instead he has personality changes. He loses that old level of sharpness that he used to have. His emotional responses and behavior may become quite different than before. Because of the lack of obvious medical findings these individuals may go undetected and continue to fill positions of major responsibility even though they are entirely different people because of the brain damage that has occurred. This can affect any person at any level of management or any employee. As more and more small vessels are involved, forgetfulness, further evidences of change in character and personality, along with evidences of what we call senility occur. If a person wants to avoid these undesirable events in life he should carefully consider the health benefits of fitness.

Atherosclerotic blockage can also affect the kidneys, the muscles, including those of the legs, and if this isn't enough, in the male the testicles are one part of the body affected earliest by atherosclerotic blockage of circulation. This results in decreased function, including in some cases a reversal of the amounts of male and female hormones in the body. In short, loss of fitness is equated with loss of masculinity. So, if you are not concerned about heart disease, or brain disease, just remember there is even more involved.

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APPENDIX C

National Adult Physical Fitness Survey:

Some Implications

Prepared by
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Physical Education and Recreation
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NATIONAL ADULT PHYSICAL FITNESS SURVEY: SOME IMPLICATIONS

Some years ago the nation was shocked when physical fitness tests revealed our children and youth to be physically soft, flabby, and much weaker than their counterparts in Europe and Asia. Now, the younger generation can point an accusing finger at their not-so-fit parents.

Manifestations of physically active Americans--joggers in the public parks, bicycle riders on the streets, and weight lifters, yoga devotees, and calisthenic zealots in the nation's gymnasia--unfortunately do not typify the average man and woman. Forty-nine million adults do not engage in exercise for physical fitness and those who do take it so easy while on a leisurely walk, riding a bicycle, swimming, or doing calisthenics, and participate for such a short period of time (20 minutes or less), that they hardly increase their heart and breathing rates. In addition, they engage in these activities only once or twice a week. Also, in spite of the upsurge in the number of health, trimline, and fitness clubs and programs, only three out of every one hundred Americans participate in an organized fitness program. Furthermore, 85% of the public do not own any exercise equipment such as weights or cycling or rowing machines.

Americans are known the world over as sports lovers but this should not be intpreted to mean they are participants. Most persons limit their enthusiasm to watching rather than playing. Indeed, the only sports activity engaged in by millions of persons takes place vicariously via the TV tube. Fewer than two out of every ten people, by their own admission, participate in swimming and bowling, the two sports that have the greatest drawing power. Furthermore, they participate very infrequently--a few times a month or less.

The fact that adults are not addicted to being physically active is a verdict rendered by the National Adult Physical Fitness Survey, the first to appraise the fitness of people 22 years of age and older. It was conducted for the President's Council on Physical Fitness and Sports by the well-respected Opinion Research Corporation of Princeton, New Jersey, using the best sampling methods and survey procedures available. Personal interviews were carried out in 360 communities from coast to coast so that the findings would provide an accuate picture of the fitness status of the entire adult population of the United States.

The findings bear out what my physical educators have suspected for some time: when childhood and school are left behind most persons become spectators and sedentary creatures because of family, business, and personal responsibilities and interests. Furthermore, those who do exercise engage in physical activity on an irregular and infrequent basis and in activities that do not stimulate their cardiorespiratory mechanisms.

Should the thousands of health, physical education, and recreation personnel in our schools, colleges, and communities be concerned with this deplorable muscular state of adult America?Or should we sit idly by saying, *Our business is to have physically fit boys and girls--what adults do is their own business?*

I submit that it is definitely our business. The exercise habits of today's adults are a clear reflection on our programs and our efforts to communicate the values of physical activity, not only to our students, but also to adults and the public in general.

Several important implications for our profession may be drawn from the President's Council survey.

1. GIVE MORE EMPHASIS TO PHYSICAL EDUCATION AND SPORT PROGRAMS IN OUR SCHOOLS AND YOUTH-SERVING AGENCIES. Persons who participate in physical education programs during their youth are more likely to be the ones who exercise in adult years. Of those persons who did not participate in physical education programs when they were young only 6% ride bicycles, 4% swim,

and 2% jog. Furthermore, the more activities a person engaged in while young the more likely he is to engage in some sport as an adult. The survey also shows that programs at the high school level have received most of the attention in the past–only 47% of the persons surveyed said they had physical education in the elementary school. Since attitudes are shaped and movement skills developed in the early years, elementary school physical education programs should receive more attention.

2. PLACE MORE STRESS ON DEVELOPING SKILLS IN LIFETIME SPORTS THAT CAN BE ENGAGED IN DURING ADULT YEARS. Most persons (more men than women–see below) surveyed engaged in team sports such as football, basketball, and baseball when they were young but few mastered skills in such activities as golf, tennis, and handball, sports that are popular in a person's later years.

3. PROVIDE GIRLS AS WELL AS BOYS WITH THE OPPORTUNITY TO PARTICIPATE IN SPORT PROGRAMS. Men had many opportunities to participate in sports during their youth but women did not; 60% of the women interviewed never participated in a team sport. If girls and women are to be fit, they also need sport experiences.

4. PROVIDE MORE PHYSICAL FITNESS OPPORTUNITIES FOR THE ELDERLY.
Although elderly persons need to be physically active, this segment of the population in actual practice is more sedentary and less exercise conscious than any other age group surveyed. Of those persons 60 years and older, 70% feel they are getting enough exercise, although they are not. Only 3% ride a bicycle (a pattern that holds for other activities as well), only 7% have ever taken a swimming lesson, and only 39% participated in a physical education class while there were in school.

5. PUBLISH FACTS THAT WILL CHANGE ATTITUDES AND BEHAVIOR, RATHER THAN JUST IMPART INFORMATION CONCERNING THE VALUES OF ENGAGING IN PHYSICAL ACTIVITY REGULARLY.
Although six out of every ten Americans had heard about the importance of physical fitness and sports participation, much of this information fell on deaf ears. It is important to disseminate fitness facts that reach the entire population and with which the individual can identify. Sound motivational research techniques need to be used as a means of changing the life-styles of adults in regard to physical activity, taking into consideration the reasons that motivated persons to exercise in this survey: *Doctor told me to, For good health, Good for you in general, To lose weight,* and *For enjoyment*. Further, it is very important for physical education programs in our schools and colleges to get at the *why* of the activity as well as the activity itself. If our students are to continue to engage in physical activity after they graduate from our educational institutions, they must clearly understand and identify with the biological, psychological, and sociological values that it has for them.

6. EXPAND RECREATION PROGRAMS FOR PEOPLE AT ALL SOCIOECONOMIC LEVELS.
People who are most likely to exercise regularly are those who are better educated and more affluent (only 7% of those persons who were in families where income was under $5,000 exercised regularly, whereas 27% did where family income was $15,000 and over). Municipalities as well as industries have an obligation to provide leadership, facilities, and time for their constituents to participate in a variety of physical activity experiences. YM and YWCA and community recreation programs should provide instruction in a greater variety of sports, rather than concentrating mainly on swimming, as shown in this survey.

Our professions are faced with the challenge of convincing man that he is

a muscular creature and therefore needs physical activity for such reasons as building strength and endurance, maintaining the health of his circulatory and respiratory systems, and keeping his muscles in proper tonus. Regular activity must be an important part of his lifestyle if he desires to maintain and protect his health and live an interesting, active, and productive life.

I. Only a little over half of the general public feel they get enough exercise

The data show that while many people feel they do not get enough exercise (40%), more say they do get enough (57%). The percentage of people saying they do not get enough exercise translates to about 44 million people.

In particular, the older respondents are more inclined to say they get enough exercise than are the younger respondents.

Amount of Exercise

"Do you feel that you get enough exercise or not?"

	% Get Enough	% Do Not	% No Opinion
Total public	57	40	3
Men	61	37	2
Women	54	43	3
22 to 29 years old	46	52	2
30 to 39	49	49	2
40 to 49	53	45	2
50 to 59	62	36	2
60 or older	71	25	4
Exercise now	53	46	1
Do not exercise now	63	33	4

II. Most people who exercise do so for reasons related to health

Among those people who exercise, a number say they exercise for good health, to lose weight (primarily among women), and because they feel exercise is generally a good thing. Some respondents also find exercise enjoyable.

Those people who do not exercise (45%) were asked why. Their reasons include: not enough time (13%); they feel they get enough exercise by working (11%); there are medical reasons (8%); and age (5%).

Reasons for Exercising

"What are some of the reasons why you exercise?" (Asked only of those who exercise)

	Total Public	Men	Women
% Asked	55%	56%	55%
For good health: good for my heart; to keep in shape; to stay in good physical condition; I can breathe better	23	26	20
Good for you in general: makes me feel better; good for me; I feel like it's good for me	18	8	12
To lose weight: to keep slim; I like to keep my shape; I'm a little on the heavy side; to flatten my stomach	13	9	17
Enjoyment: I like doing it; for pleasure and relaxation; for recreation	12	13	11
Doctor told me to	3	4	3

III. Among the general public, those who have participated in school sports are more likely to be exercising now than those who did not participate in school sports

This pattern holds for all the exercises shown here.

"Which, if any, of these exercises are you now doing?"

Participation in School Sports

	% More Than One	% One	% None
Walk	46	40	35
Ride a bicycle	24	15	12
Swim	22	12	7
Do calisthenics	20	10	9
Jog	10	4	3
Lift weights	5	3	1
Other	7	3	3

IV. Similarly, people who took physical education are more likely to exercise now than those who did not participate in physical education

"Which, if any, of these exercises are you now doing?"

Participation in Physical Education

	% Yes	% No
Walk	43	33
Ride a bicycle	21	6
Swim	17	4
Do calisthenics	16	4
Jog	7	2
Lift weights	3	2
Other	5	3

V. People who took physical education are more likely to participate in noncompetitive sports now than are those who did not take physical education

"Looking at this card, please tell me which of these sports (other than the ones you already mentioned) you now participate in or participated in during the last season on a noncompetitive basis—that is, either by yourself, or with friends."

Participation in Physical Education

	% Yes	% No
Swimming	22	4
Bowling	15	4
Golf	8	2
Tennis	7	1
Volleyball	6	1
Baseball	5	2
Softball	5	1
Basketball	5	*
Football	4	1
Water skiing	4	*
Snow skiing	3	*
Gymnastics	2	1
Handball	2	*
Track and field	1	*
Wrestling	1	*
Soccer	1	0
Other	4	1

VI. People in younger age groups are more likely than older ones to have taken physical education while in school

Participation in Physical Education

"Were these classes in elementary school, junior high, high school, or in college?" (Asked only of those who had physical education or gym class in school)

	% Asked	% Ele.	% Junior High	% High School	% College	% Not Reported
Total public	70	36	42	57	12	1
Men	70	36	41	56	14	1
Women	71	35	42	56	9	1
age 22 to 29	93	47	68	85	20	–
30 to 39	89	45	62	76	15	1
40 to 49	74	37	43	63	11	–
50 to 59	67	32	34	46	8	2
60 or older	39	22	14	23	6	1
High school incomplete	45	26	25	22	0	1
High school complete	87	37	51	80	0	1
Some college	93	51	60	86	52	–

VII. Most people who have taken gym classes feel that physical education is beneficial

Among the 70% of the general public who have taken physical education, a strong majority say it was good for them. Only a few say it made no difference and almost no one believes gym classes were detrimental.

Effects of Physical Education

"Do you feel that gym classes were good for you, bad for you, or didn't it make any difference?" (Asked only of those who had physical education or gym class in school)

	% Asked	% Good	% Bad	% No Difference	% Don't Know
Total public	70	60	1	8	1
Men	70	62	1	7	1
Women	71	59	1	10	1

VIII. There is strong support for physical education at all grade levels

Majorities of both men and women feel that people should have physical education in school. This support is across the board and comes from all subgroups. Only a few people in any age, economic, or social class say people should not have physical education.

Should People Have Physical Education?

"Do you feel that most people should have physical education in elementary school or shouldn't they?

"Do you feel that most people should have physical education in junior high, senior high, or college or shouldn't they?"

	% Total Public	% Men	% Women
Elementary school			
Yes	90	89	90
No	4	5	3
Makes no difference	4	4	4
Other/no opinion	2	2	3
Junior high, senior high, or college			
Yes	91	91	90
No	2	2	2
Makes no difference	4	4	4
Other/no opinion	3	3	4

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APPENDIX D

A High School's Physical Education Curriculum with Selective Scheduling

Prepared by
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Bureau of Curriculum Services
Pennsylvania Department of Education

A HIGH SCHOOL'S PHYSICAL EDUCATION CURRICULUM with SELECTIVE SCHEDULING

INTRODUCTION

In continuing to seek better ways to offer more to each student, it is often necessary for the educator to turn away from tradition and to consider a different and more effective method of pursuing the goal of education.

A self-selected curriculum by each student may not be a particularly innovative concept, but too often it remains in the comfortable and noneffecting realm of ideas instead of in the form of implementation.

A complete understanding of the following paragraphs describing a high school physical education curriculum and its schedule necessitates a brief explanation of origin. As a result of an Elementary and Secondary Education Act planning grant given to Marion County, Florida in 1967 to study existing programs of physical education in public and private schools of serveral Central Florida counties, the Physical Education Competence Curriculum Center was created. Located in Ocala, Florida, the Marion County based Title III Project was to assist five central Florida Counties in implementing change in physical education curricula and instruction. Attainment of this objective was to be through comprehensive in-service education for physical educators, consultant services, and establishment of sequential exemplary programs in three Ocala public schools. An elementary, junior high, and senior high were chosen to serve as schools with model physical education curricula.

One objective of the senior high school was to provide opportunities for each high school graduate to become competent in one or more lifetime activities of his own choosing.

The following description of a secondary elective physical education curriculum and its schedule is not theoretical. It relates what has and is being done to make much of the physical education experience student-selected.

The application of this approach to a departmental curriculum and the method with which such a curriculum is scheduled has broad implications for each of the disciplines.

PHILOSOPHY

The philosophy on which a program of this type is based simply allows interest, hopefully after exposure, to play a major role in determining the student's physical education program. There may be as many different curricula as there are combinations of activities. Consequently, there are many students with different physical education programs.

The program is in two parts:

(1) The physical education department's required program, consisting of required courses, limited electives and electives, and
(2) The elective program, consisting wholly of electives.

The required program is for sophomores and those upper class members who have not yet satisfied the physical education department requirements.

The elective program is for those upper class members who have completed the departmental requirements.

THE CURRICULUM

Code: R (required for sophomores and those who have not completed department requirements.)
E (elective for juniors and seniors.)

Conditioning Activities (Moderate)	First Quarter	R
Conditioning Activities (Strenuous)	First Quarter	R
Tumbling and Gymnastics	Second Quarter	R
Wrestling or Weight Training	Second Quarter	R
Tumbling and Gymnastics	Third Quarter	R
Dance or Personal Development	Third Quarter	R
Archery (Coed)	First Quarter Only	E
Badminton (Coed)	Third Quarter Only	E
Bowling (Coed)	All Quarters	E
Golf (Coed)	First Quarter Only	E
Tennis (Coed)	Second & Fourth Quarters	E
Boys' Seasonal Sports	First & Fourth Quarters	E
Girls' Seasonal Sports	Second and Fourth Quarters	E
Advanced Tumbling and Gymnastics(Coed)	Second Quarter Only	E
Weight Training	Third Quarter Only	E
Dance	Third Quarter Only	E

THE YEARLY SCHEDULE

First Nine Weeks

Sophomores: Physical conditioning (boys and girls)

Juniors and seniors: (Choice of) Archery, bowling, golf, boys' seasonal sports

Second Nine Weeks

Sophomores: Weight training or wrestling
Tumbling and gymnastics

Juniors and seniors: (Choice of) Tennis, bowling, advanced tumbling and gymnastics, girls' seasonal sports

Third Nine Weeks

Sophomores Tumbling and gymnastics
Dance or personal development

Juniors and seniors: (Choice of) Weight training, badminton (Coed), bowling (Coed), dance

Fourth Nine Weeks

Sophomores, juniors, seniors: (Choice of) Tennis (Coed), bowling (Coed), girls' seasonal sports, boys seasonal sports

The yearly scheduling of the curriculum was done by the department. Decisions revolved around weather, seasonability of activities, and the desire to be out-of-doors during spring, regardless of the activity.

It was decided that the year would be divided into four nine-week quarters. Courses were offered each none-week quarter depending upon weather, teaching stations available and instructional competencies of the staff. Additional considerations included philosophy of the department, type of community, interest of the students, number of students which could be accommodated in specific activities, and administrative cooperation.

One situation arose as a result of the popularity of one course which was offered. The interest was anticipated as the class was to be held off campus and students enrolled in the course would not have to *dress out*. The department decided to offer the course each quarter to provide opportunity for each student to enroll in the course.

Another situtation which arose became a consideration for scheduling activities. Several periods had large enrollments as a result of the scheduling used by the school administration. It was decided to schedule at least one activity to accommodate a larger number of students during the quarter. Usually this activity was a seasonal sport class or a course such as weight training, which, as a result of the nature of the activity involved can accommodate more students than, for instance, badminton, archery or golf.

EXAMPLES AND MECHANICS OF IMPLEMENTATION

An example mimeographed index card (below) has been filled out with activities in which this student participated. Each nine weeks students determine the activities in which they would like to participate and then indicate the activity and area by placing a check in the appropriate space.

For example, during registration a student goes to the desired activity offered. If the class is not closed, the student marks his card. On the required physical education student's blue card shown below, notive that during the first nine weeks he is required to take conditioning activities as that is part of the required program for boys and girls.

BLUE CARD

Name JONES (Last) JOHN (First) L. (Middle Initial) Period 2

Sex MALE Grade 10

FIRST NINE WEEKS	SECOND NINE WEEKS	THIRD NINE WEEKS	FOURTH NINE WEEKS
Physical Conditioning	__Wrestling or ✓Weight Training. __Tumbline and Gymnastics	✓Tumbline and Gymnastics __Dance or __Personal Development	__Tennis __Bowling ✓Sports

A SIMPLE METHOD OF REGISTRATION

Boys and girls in each period of physical education are arranged in squads and seated in the gym. Numbers representing squads are drawn at random. When a number is drawn both the boys' and girls' squads whose number is drawn go to the registration tables located in the gym to register for the desired activity which is offered. After these two squads have registered another number is drawn and the procedure is repeated. The operation is continued until all have registered. A class of 140-160 students usually takes about 30 minutes.

AN ELECTIVE PROGRAM CARD

Below is a card which represents an elective program of physical education taken by a senior girl.

YELLOW CARD

Name SMITH (Last) MARY (First) J. (Middle Initial) Period 5

Sex FEMALE Grade 12

FIRST NINE WEEKS	SECOND NINE WEEKS	THIRD NINE WEEKS	FOURTH NINE WEEKS
✓Archery __Bowling __Golf __Sports	__Tennis __Bowling ✓Advanced Tumb. & Gym. __Sports	✓Dance __Weight Training __Badminton	✓Tennis __Bowling __Sports

EXAMPLE II

Her physical education experience, 100 per cent self-selected, consisted of those activities checked on the card above.

RESULTS FROM A SAMPLE OF ELECTIVE STUDENTS RESPONDING TO SEVERAL ITEMS OF THE PHYSICAL EDUCATION STUDENT SURVEY 1969-70

	No	Slightly Negative	Neutral No Opinion	Slightly Positive	Yes	Number of Respondents
Do you like the opportunity of selecting activities?	3.4%	.7%	2.4%	7.6%	86.0%	286
I prefer being assigned to an activity by a teacher.	79.7%	6.1%	4.7%	4.1%	5.4%	296
Coeducational Classes in physical education are acceptable to me.	4.5%	4.5%	12.7%	16.4%	61.9%	292
Having a physical education instructor of the opposite sex is acceptable to me.	7.1%	5.5%	15.7%	15.0%	56.7%	293
By having the opportunity to select an activity that appealed to me, I found a lifetime sport that I enjoy more than any of the other activities.	10.9%	6.2%	13.4%	18.8%	50.7%	276
Do you want this kind of physical education program continued?	9.5%	1.8%	14.2%	10.2%	63.9%	285

SOME ADVANTAGES TO A STUDENT SELECTED HIGH SCHOOL PHYSICAL EDUCATION EXPERIENCE

MOTIVATES VIA INTEREST

The first advantage the student-selected physical education experience has is motivation based upon the interest of the student. It has been long established that the best learning takes place when the student is interested and involved with the activity which is taking place. By allowing a selection from physical education course offerings determined by the physical education staff and students, a greater chance of matching a student's interest with an activity exists, and a greater opportunity for learning is provided.

The interest centered curriculum also provides advantages for the instruction. First, the realization that at least the majority of the class is there because of interest can have a profound effect upon the class; they *want* to be in this course; they *want* this instructor. Whether a student is in a particular class

because he or she wants to be, has broad implications for the teacher in class management, absenteeism, continuity of instruction, breadth and depth of instruction as well as many other factors. In addition, the instructor should not have to be as concerned about creating interest in an activity; the interest is evident. It is necessary, though, for the teacher to be careful of eradicating interest within the class. The instructor also has the advantage of teaching an activity which is usually a personal favorite; one in which the teacher believes he is most competent.

UTILIZES COMPETENCIES OF STAFF

The physical education department which employs the student-selected physical education experience usually determines much of the curriculum by surveying instructional competencies of the staff and providing an opportunity for students with an interest in a particular activity to be taught by the specialist. There is little logic in having a highly skilled staff member in a particular activity available and not allowing *all* students an opportunity to be instructed by the specialist. But this situation exists to some degree in most schools today.

Utilization of staff competencies, in addition to offering better instruction in some activities, usually broadens a department's curriculum. By surveying the staff, many activities which were being taught in excess can be identified, the number of times taught reduced and new courses developed to replace those eliminated. Moreover, while broadening the curriculum to be offered to the students, the method described above reduces the number of activities taught by an individual physical education instructor. Instead of teaching six, eight, or ten activities per year to the students assigned to him, the instructor may only teach three or four activities annually. The reduction in the number of activities taught usually results in more time devoted to preparation and ultimately better instruction.

One criticism often occurs around utilization of staff competencies relative to reducing the number of activities each instructor teaches. The objection is the fear of creating *narrow specialists* on the physical education staff. In the typical school situation, instructors teach those activities in which they believe possession of competence will be exhibited. They usually do not teach anything that will place them in a position that their knowledge or credibility could be questioned. This situation is no different from utilizing the instructors competencies in a program designed for student selection of their physical education experience. The student selected program does differ from some school situations as it relieves the instructor from teaching some activities in which suitable competence is lacking.

ALLOWS MANY STUDENT-TEACHER RELATIONSHIPS

The student-selected physical education program provides an opportunity for students to meet other department personnel in a student-teacher relationship. The advantage of giving students an option in selecting or identifying with a particular staff member has several facets.

Student identification with a staff member immediately provides an excellent environment for counseling should the need for strong guidance ever arise. In addition, a strong student-teacher relationship may be the only thing keeping a particular student enrolled in school.

Another aspect is by providing the opportunity to select activities the students are given a change to avoid personality conflicts with particular instructors. Student-teacher conflicts have caused many poor learning-teaching situations.

Students, by choosing the activities in which they participate, can be exposed to differing philosophies, ideas, and instructional methodologies of physical education employed by the individual members of the department. Moreover, by having the opportunity to select activities from the entire physical education staff (men and women), the student will not be limited to instructors of one sex.

PROVIDES STUDENTS OPPORTUNITIES FOR IN-DEPTH STUDY

In a recent JOHPER article, Paul R. Varnes, former director of the Physical Education Competence Curriculum Center in Ocala, Florida, now Director of Intramural Athletics, University of Florida, asserts the objectives of secondary physical education should be student exhibition of competent and observable skills in self-selected activities. Dr. Varnes expands this concept by taking into account individual differences of students. He states:

> "At the senior high school level we should provide an opportunity for the student to develop a high degree of competence in an activity, or many activities, of his own choice. We should allow for a study in depth of one or more activities of lifetime value as chosen by the student. We cannot justify continuing the short unit approach and the resulting shotgun effort of activity involvement. Competence should be the goal, and it is only too obvious that not all students can gain competence in the same period of time. In such a complicated activity as golf, it is doubtful that any student can gain competence in a six week unit of instruction and some perhaps cannot gain competence in a year; but a student should be allowed to try for as long as it takes, if this is his choice and if he is highly motivated toward this goal."[1]

DEVELOPS STUDENT ASSISTANTS

In a student-selected physical education program, the student has the prerogative of enrolling in the same activity each time it is offered by the department. Skill range in an activity class will vary greatly the first time it is scheduled, and by the second and third time it is offered extremes in student abilities within a particular class may differ even more. But, some students who, after taking a course for the first and/or second times and have enrolled again, probably have developed a level of competency suitable to assist the instructor. Not only will use by the instructor of the competent student as an assistant give the student a leadership role in class, but assisting in the teaching of a skill could provide him a greater in-depth study of the activity.

Proper utilization of the competent student assistant will provide the instructor with additional time to work with those students who need more individual attention. In addition, the competent student leader can provide when properly guided by the instructor, an additional pair of eyes to identify learning problems and see errors in executing skill techniques.

PROVIDES A MODIFIED PROGRAM OF PHYSICAL EDUCATION

Students who cannot participate in vigorous physical activity because of physical limitations such as rheumatic heart or severe asthmatic condition can select an appropriate offering when presented with a choice of several. Self-selection of the activity will provide the opportunity to be in a regular physical education class (whenever an appropriate course which interests the student is offered). Moreover, in-depth study of a particular sport could develop the skill of the a typical child to a level that the physically limited student could become a student assistant whenever appropriate.

CAN EXIST WITHIN A TRADITIONAL SCHOOL SCHEDULE

The student selected physical education experience can be implemented within the traditional physical education period. The course offerings are determined period-by-period according to the instructors available. The scheduling of the students into the desired activities can be accomplished with a single class period. Implementing the student-selected physical education curriculum does not affect the school's schedule and does not require a modular or flexible scheduling technique for the department or school.

CONCLUSION

If education in the future is to be held more accountable for its product, then

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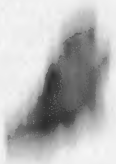
[1] Varnes, Paul R., *Journal of Health, Physical Education and Recreation*, June, 1970, p. 26.

physical education as an inherent part of education will be assessed upon the concepts, knowledge, fitness and skill competencies of graduating students. It is hoped consideration will be given to developing skill competencies of high school students by the implementation of student-selected physical education programs.



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APPENDIX E

CONTRACTING:

An Approach to Providing Flexibility in the Physical Education Program

Prepared by
Bureau of Curriculum Services
Division of Interdisciplinary Studies
1974

CONTRACTING:
AN APPROACH TO PROVIDING FLEXIBILITY
IN THE PHYSICAL EDUCATION PROGRAM

I. A Balanced Physical Education Program

A well balanced physical education program is an essential part of the total education program. It is education through, as well as of, the physical.

A balanced physical education program:

- promotes health and a sense of well-being in youth.
- contributes to cardiorespiratory fitness, endurance, flexibility, agility, balance, muscular strength, speed, power and coordination.
- teaches efficient, graceful, useful movement skills at all developmental levels.
- is a planned sequence of experiences in a variety of activities beginning with basic and progressing toward complex movement and skills.
- helps individual students to develop a wholesome self-concept and an acceptable perception of others.
- encourages constructive use of time, including leisure hours, in keeping fit and enjoying physical recreation both during the school years and throughout adult life.
- helps students to understand and appreciate expressive, creative-aesthetic movement as participant or observer.
- contributes to the emotional, social, mental, moral and ethical adjustment of students.

To be effective, a well balanced physical education program must develop the student's deep respect for his or her body as a delicate instrument yet powerful and enduring if given the proper care.

Such a program should include some or all of the following elements:

Individualizing programs and instruction. Because each child is different--developing at his or her own pace--instruction and programs must be individualized.

Student selected physical education programs. Learning takes place when the student is interested and involved in the activity in which he or she is involved. Allowing the student a selection provides a greater chance of matching an activity with his or her interest. Student selected physical education programs may be conducted within the required program by offering several courses during each marking period or within other instructional time units.

Contracting in physical education. Students participate in planned courses of their own choice. They set their own pace, stipulating when they plan to complete the course or activity. This provides opportunities for individualized instruction.

Greater efforts in programs of Lifetime Sports. One who learns basic skills in sports activities can pursue and enjoy them throughout adult life. Continued physical activity will become an important and natural part of one's lifestyle. Swimming, tennis, golf, bowling, archery, cycling and other activities everyone can learn will give lifetime benefits.

II. Contracting

Contracting provides experiences that are not standard to the typical physical education facilities and/or program. It calls for explicit objectives, procedures and evaluation. Close monitoring of a student's progress and a follow up are necessary for contracting to be a worthwhile experience. This requires the expertise of the physical education specialist prepared in the science of human movement. Any lesser prepared para-professional should not be accepted.

A major concern emanating from such a prototype program is substitution of the skilled practioner for the professional physical education specialist. Teachers, supervisors and administrators must exercise caution to prevent an over reaction to contracting. Students should not be involved in contracting for more than 20 per cent of their physical education program.

III. Guidelines for Designing a Physical Education Activity Contract for Graduation Credit

A. Administrative and Curricular Considerations

1. The contract method should be approved by the local school directors for awarding graduation credit. Such a contract should be a written agreement between the student, the physical education department and the administration.

2. The contract should be written only for those activities which are identified by the district physical education department as part of the planned course of study.

3. The contract should contain but not be limited to the following components:

   - stated objectives written in terms of observable behaviors
   - content specifically described in an outline of subject matter.
   - a description of planned experiences designed to meet stated objectives. This should include equipment to be used, location of each activity, available resource material and personnel, and alternative experiences in the event unforseen circumstances occur.
   - expected outcomes stated in terms of observable behaviors which may be negotiated between student and the physical education department.
   - a description of procedures and specific criteria used in evaluating pupil progress including an assessment of the contract effectiveness.

4. The contract should be developed, monitored and verified by a currently certificated physical education instructor and can take place on or off the school campus. Instructional assistance may be provided from noncertificated personnel under the provisions of Section 49.62, Chapter 49, Certification of Professional Personnel.

Temporary letter of certification–The Secretary of Education may issue a Letter of Certification at the request of an employing school district. The Letter of Certification may be issued in lieu of a certificate to a competent specialist in any area of knowledge. This will enable Commonwealth schools to use the services of noncertificated personnel for supplemental instruction under the supervision of a certificated teacher. The service shall be part time and shall not exceed 300 clock hours during a school year.

5. The contract should be in writing, signed by the student, the school district representative and the parent or guardian and should contain stipulations *including* but not limited to:

   a. duration of contract

   b. monitoring procedures

   c. counseling procedures and dates and locations for periodic assessments of pupil progress

   d. insurance and liability coverage which identifies insured and insuror

   e. estimated cost (if any) to student

   f. travel requirements (if any), mode of transportation, identification of vehicle and driver, and location(s) of learning activities

   g. equipment and material requirements which include a succinct description of type, number, and uses of same, a policy statement relating to use of student's personal supplies and equipment, and procedures to be followed in obtaining equipment and supplies for the planned learning experiences

   h. final grade or evaluation criteria and procedures to be utilized by the instructor in assessing pupil achievement

   j. stipulations concerning criteria mutually considered for renegotiating the contract.

B. Target Population

Contracting for part of the planned course on physical education is a method to be utilized by a student due to:

- participation in a vocational education program which prohibits scheduling of the required two separate periods per week of physical education.
- accelerated programs which may require a longer school day.
- physical disabilities which cannot be served in the regular instructional program.
- a student or group of students who have demonstrated a need and ability to follow an individually prescribed course of study

C. Conditions Under Which Contracting Should be Considered

1. Field experiences. Contracts which provide credit relative to extracurricular or interscholastic experiences should contain aforementioned criteria and procedures. Credit toward graduation should be granted only on an activity (specific course) basis and should not be repeated. The objectives of a district physical education program should be established and student should be given credit toward fulfilling those objectives.

2. Student will not receive a physical education program due to participation in other educational endeavors which vicariously or officially have had physical education graduation requirements waived,

3. A student has completed department requirements which may only be available on the school campus,

4. A student has not utilized the contracting method for more than 20 per cent of the physical education course of study.

D. Activities for which contracts may be written should appear in the planned physical education course of study. Suggested activities for which contracts may be written include but are not limited to:

- physical fitness or aerobics
- archery
- badminton
- bicycling
- bowling
- golf
- fly and bait casting
- hiking and camping
- orienteering
- swimming and other aquatic activities
- recreational shooting
- dance
- handball
- small craft operation
- skiing
- snow shoeing
- ice skating
- roller skating
- snow sledding and tobogganing
- surfing
- snorkeling and scuba diving
- tennis

E. Considerations for District Physical Educators

While creativity in physical education programs is the key to flexibility, one must be constantly aware of keeping the program in perspective. Contracting is only one of the creative innovations applicable to physical education. Its true value may be overlooked for expediency in scheduling problem areas, student enrollment pressuring facilities, or curtailing needed expansion in staff.

The validity and creditability of the physical education contract depends upon the criteria established by district personnel. Therefore, responsibility for the success of contracting in physical education as a viable education process begins and ends with district physical educators. It is important that the contracting process be evaluated on a continuing basis to ensure that it is a legitimate educational experience.